UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,739	12/04/2003	Robert T. Bigelow	BA-U-BLK-00010	4006

7590 08/02/2007

Mr. Franklin E. Gibbs, Esq.
Bigelow Aerospace
1899 W. Brooks Ave.
North Las Vegas, NV 89032

EXAMINER	
PAINTER, BRANON C	

ART UNIT	PAPER NUMBER
3609	

MAIL DATE	DELIVERY MODE
08/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/727,739	BIGELOW, ROBERT T.	
	Examiner	Art Unit	
	Branon C. Painter	3609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/04/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 12/04/03 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "152" has been used to designate both longerons and second bulkhead assembly in Fig. 5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

a. Page 2, line 16, "launched brought." For the purpose of this examination, the examiner presumes this should read "launched and brought."

b. Page 6, line 28, "tow." For the purpose of this examination, the examiner presumes this should read "two."

c. Page 7, line 16, "bolts 124." For the purpose of this examination, the examiner presumes this should read "bolts 120."

d. Page 7, line 23, "bladder as." For the purpose of this examination, the examiner presumes this should read "bladder has."

e. Page 7, line 29, "flanges 106, 018." For the purpose of this examination, the examiner presumes this should read "flanges 106, 108."

f. Page 7, line 32, "extend from." For the purpose of this examination, the examiner presumes this should read "extending from."

g. Page 8, line 13, "straps 126." For the purpose of this examination, the examiner presumes this should read "straps 127."

h. Appropriate correction is required for all the preceding objections.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 8, 9, 12, 14, and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Raboin et al. (U.S. Patent No. 6,547,189).

6. Regarding claim 8, Raboin et al. discloses an inflatable vessel having all of the applicant's claimed structure, including:

   a. "A bulkhead assembly...the inflatable modular structure having at least two longerons..." ("module" 10 with "longeron" 102, Fig. 1).

   b. "...an inflatable bladder having an opening on opposite ends, and a flexible restraint layer having an opening on opposing ends and a plurality of attachment loops on either end..." ("inflatable shell" 200, Fig. 1, comprising "bladder" 211 and "structural restraint" 212, Fig. 14, and including structural restraint loops as seen in 212, Fig. 15).

   c. "...the bulkhead assembly comprising: a plate..." ("end ring" 116, Fig. 1).

   d. "...means for securing the longerons to the plate..." ("Each of the two end rings 116 is fixedly attached, by means well known in the art such as welding or bolting,...to an end of each longeron 102," column 11, lines 20-23).

   e. "...means for securing one of the opposing ends of the inflatable bladder to the plate..." ("seal ring" 422, Fig. 14; "The thicker single bladder 211 is also sealingly constrained between the secondary end ring area 158 of each end ring 116 and seal ring 422," column 14, lines 48-52).

   f. "...means for securing the attachment loops on one of the opposing ends of the flexible restraint layer to the plate." ("attachment ring" 182, Fig. 15; "Attached to structural restraint 212 as previously disclosed, each attachment

ring 182 is fixedly connected, by means well-known in the art such as bolting, to one of the end rings 116," column 15, lines 39-42).

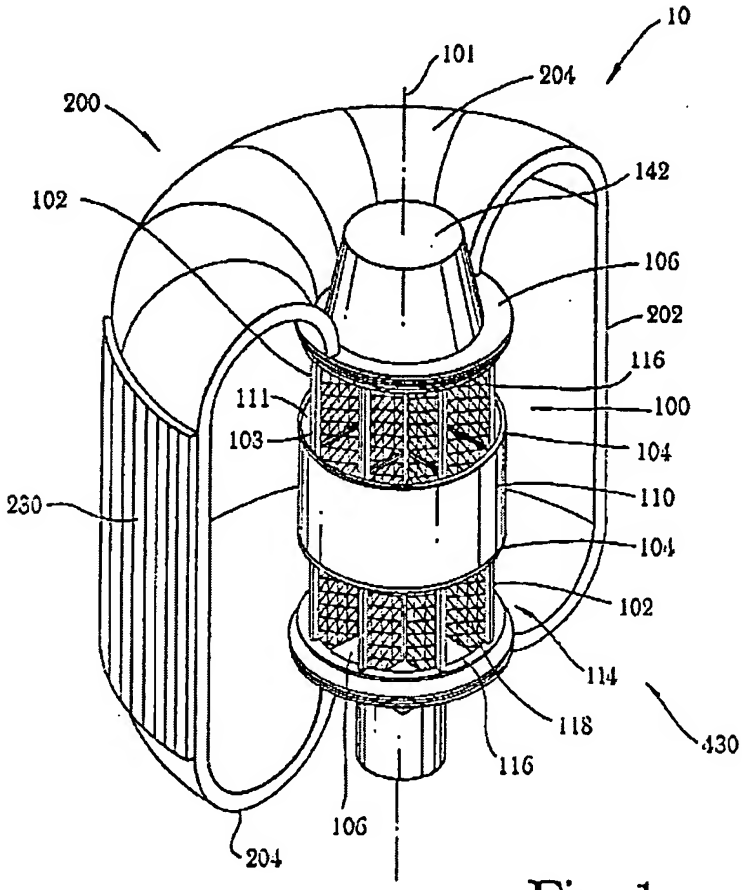

Fig. 1

Reproduced from U.S. Patent No. 6,547,189

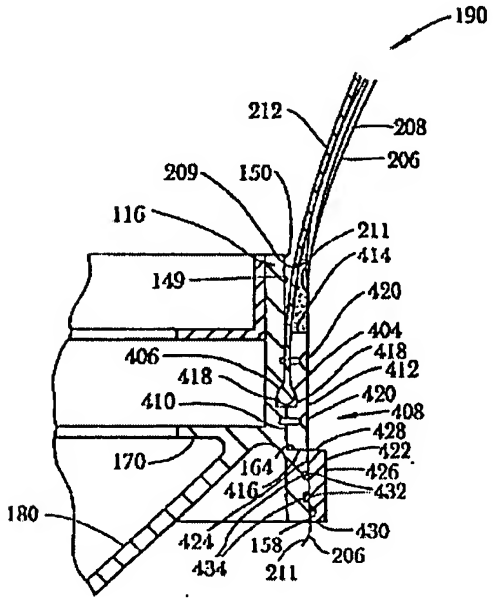

Fig. 14

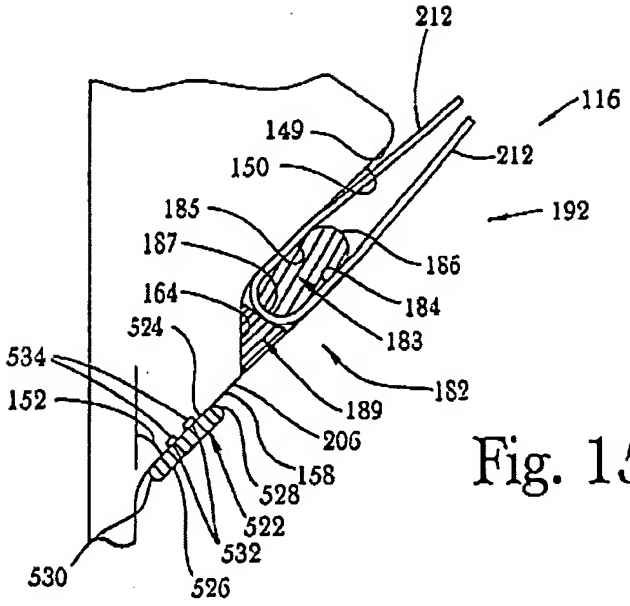

Fig. 15

Reproduced from U.S. Patent No. 6,547,189

7. Regarding claims 9 and 12, the structure of the apparatus renders the claimed method steps inherent since the claimed method steps would inherently be performed when assembling the inflatable vessel as disclosed in claim 8 by Raboin et al.

8. Regarding claims 14 and 18:

   a. Raboin et al. discloses an inflatable vessel having all the structure of claim 8, and further including: a truss composed of longerons with fore and aft ends (truss made of "longerons" 102, Fig. 1) [claim 14].

   b. The structure of the apparatus renders the claimed method steps inherent since the claimed method steps would inherently be performed when assembling the inflatable vessel as disclosed by Raboin et al. [claims 14 and 18].

9. Regarding claim 19, Raboin et al. discloses a clevis having all of the applicant's claimed structure, including:

   a. "A longitudinal restraint fitting being substantially "U"-shaped defining opposing posts..." ("clevis" 530, Fig. 32).

   b. "...the new posts being adapted to receive a pin..." ("pin" 554, Fig. 32).

   c. "...each longitudinal restraint fitting further comprising a roller adapted to receive a pin and the roller being disposed between the opposing posts and the pin cooperating with the posts and the roller such that the roller is rollable." ("roller" 532, Fig. 32).

   d. The examiner further notes that clevis is a well-known term in the art, and is defined as "a coupler shaped like the letter U with holes through each end so a bolt or pin can pass through the holes to complete the coupling" by WordNet.

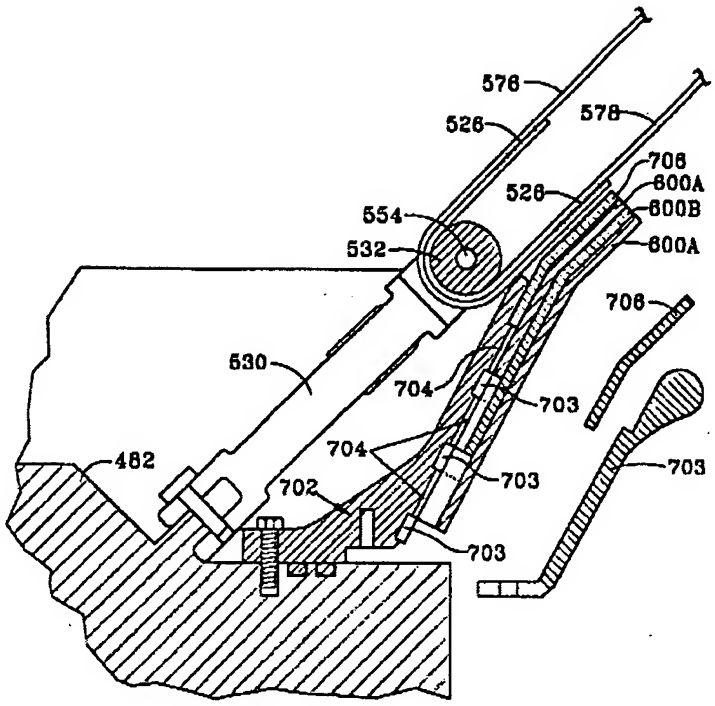

FIG.32

Reproduced from U.S. Patent No. 6,547,189

10. Regarding claim 20, Raboin et al. discloses a clevis having all of the applicant's claimed structure, including:

    a. "A longitudinal strap having a loop..." ("elongate straps" 576 and 578 are sewn together to form a single, looped strap, Fig. 32).

    b. "...a longitudinal restraint fitting on a bulkhead..." ("clevis" 530 fitting on "core or bulkhead" 482, Fig. 32).

    c. "...roller and pin." ("roller" 532 and "pin" 554, Fig. 32).

    d. The structure of the apparatus renders the claimed method steps inherent since the claimed method steps would inherently be performed when

securing the strap to the longitudinal restraint fitting on a bulkhead as disclosed by Raboin et al.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1. Determining the scope and contents of the prior art.
    2. Ascertaining the differences between the prior art and the claims at issue.
    3. Resolving the level of ordinary skill in the pertinent art.
    4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 1-5, 7, 10, 11, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raboin et al. (U.S. Patent No. 6,547,189) in view of Hebert (U.S. Patent No. 6,442,903).

14. Regarding claim 1:

    a. Raboin et al. discloses an inflatable vessel including:

        i. "A bulkhead assembly...the inflatable modular structure having at least two longerons..." ("module" 10 with "longeron" 102, Fig. 1).

ii. "...an inflatable bladder having an opening on opposite ends, and a flexible restraint layer having an opening on opposing ends and a plurality of attachment loops on either end..." ("inflatable shell" 200, Fig. 1, comprising "bladder" 211 and "structural restraint" 212, Fig. 14, and including structural restraint loops as seen in 212, Fig. 15).

iii. "...the bulkhead assembly comprising: a plate having an inner surface..." ("end ring" 116, Fig. 1).

iv. "...a plurality of longitudinal restraint fittings..." ("clevis" 530, Fig. 32; "A series of closely spaced devices 530, each with a roller 532 as shown in Fig. 2, may be used," column 26, lines 59-61).

v. "...a first bladder flange..." ("deadman retainer" 408, Fig. 14).

vi. "...a second bladder flange..." ("seal ring" 422, Fig. 14).

vii. "...a plurality of flange seals..." ("seals" 432, Fig. 14).

viii. "...the first and second bladder flanges adapted to securedly receive one of the opposing ends of the inflatable bladder therebetween..." (flanges receive "bladder" 211, Fig. 14).

ix. "...the second bladder flange being secured to the inner surface of the plate with a plurality of flange seals secured between the plate and the second bladder flange..." ("seals" 432, Fig. 14).

x. "...the plurality of longitudinal restraint fittings being secured to the plate and each of the longitudinal restraint fittings adapted to receive an attachment loop from one of the opposing ends of the flexible

restraint layer such that the layer substantially encompasses the bladder." (loop shown in Fig. 15; the same "structural restraint" 212 is shown encompassing "bladder" 211 in Fig. 14).

b. Raboin et al. does not expressly disclose:

   i. "...at least two longeron sleeves, each sleeve being fixedly secured to the inner surface of the plate and adapted to securedly receive a longeron."

c. Hebert discloses two longeron sleeves, each fixedly secured to a plate and adapted to receive a longeron ("air distribution header" 28 with attached "sleeves", amended Fig. 4D). The use of longeron sleeves as taught by Hebert allows longerons to be easily secured without the need for fasteners, welding, etc.

d. The examiner further notes that Raboin et al. disclose attaching the longerons to the plate: "Each of the two end rings 116 is fixedly attached, by means well known in the art such as welding or bolting, at its end ring lower surface 151 to an end of each longeron 102" (column 11, lines 20-23).

e. Raboin et al. and Hebert are analogous art because both are from the field of endeavor of inflatable apparatuses.

f. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the end rings of Raboin et al. by attaching longeron sleeves as taught by Hebert, in order to ease the longeron

installation process and remove the need to weld or bolt the longerons directly to the end ring.

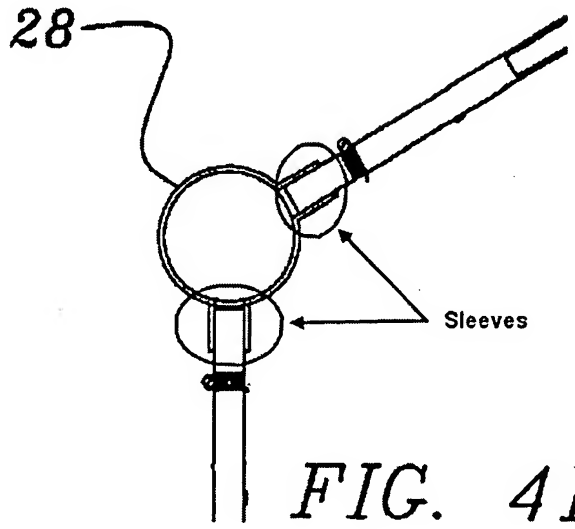

FIG. 4D

Reproduced from U.S. Patent No. 6,442,903 (Amended by Examiner to Highlight Details)

15. Regarding claim 2:

    a. Raboin et al. discloses an inflatable vessel as applied to claim 1 above, further including a longitudinal restraint fitting that is "U"-shaped with opposing posts and a roller secured between the posts ("clevis" 530 with "roller" 532, Fig. 32).

16. Regarding claim 3:

    a. Raboin et al. discloses an inflatable vessel as applied to claim 1 above, further including a separate plate with access holes ("endplate" 106 with "pass-through holes" 112, Fig. 3).

    b. Raboin et al. does not expressly disclose an access opening in the end ring 116.

c. It would have been obvious to one of ordinary skill in the art to modify the end rings of Raboin et al. to include pass-through holes as also taught by Raboin et al.

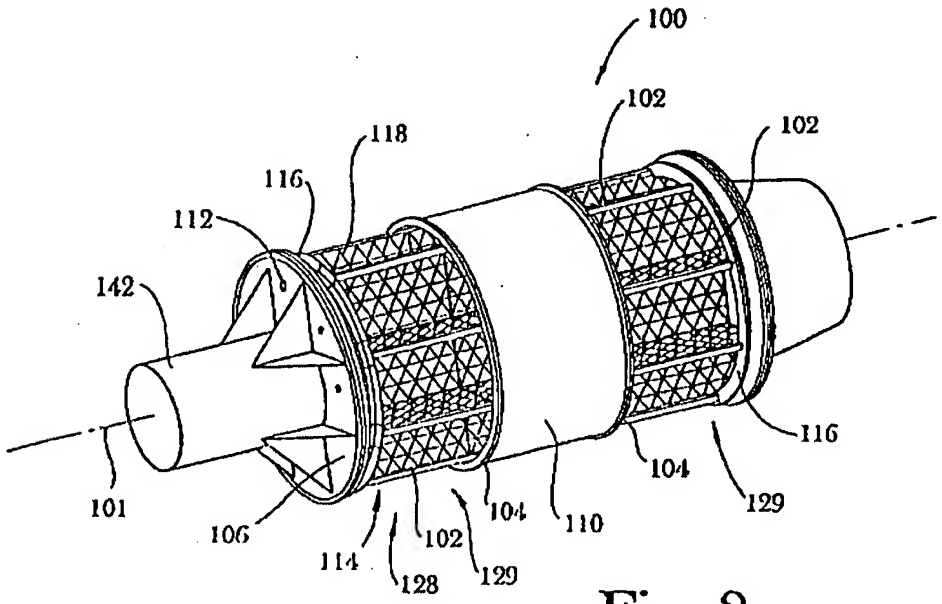

Fig. 3

Reproduced from U.S. Patent No. 6,547,189

17. Regarding claims 4 and 5:

a. Raboin et al. discloses an inflatable vessel as applied to claim 1 above, and further including a plate with an outer surface adapted to receive an airlock or distal end assembly ("airlock" 142, Fig. 3).

18. Regarding claim 7:

a. Raboin et al. discloses an inflatable vessel as applied to claim 1 above, and further including longitudinal restraint fitting adjacent to the second bladder flange ("clevis" 530 adjacent "seal ring" 422, Figs. 32 and 14).

b. The examiner notes that adjacent does not require absolute contact, but requires relatively close position. -- Ex parte Hadsel (PO BdApp) 109 USPQ 509.

19. Regarding claims 10, 11, 13, and 16:

a. The respective combinations of components detailed above render the claimed method steps obvious since such would be the logical manner of using the combination.

20. Claims 6, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raboin et al. (U.S. Patent No. 6,547,189) in view of Hebert (U.S. Patent No. 6,442,903) as applied to claims 1-5, 7, 10, 11, 13, and 16 above, and further in view of Edberg et al (U.S. Patent No. 5,961,078).

21. Regarding claim 6:

a. Raboin et al. in view of Hebert discloses an inflatable vessel as set forth above [claims 1, 3, and 8].

b. Raboin et al. does not expressly disclose that the plate surface is covered with a plurality of bulkhead load pads.

c. Edberg et al. discloses the use of load pads to protect payload from launch accelerations ("Mounting pads are coupled to the lower interface ring," column 2, line 13; "The upper portion of the isolator assembly provides the interface with the payload that requires protection from launch accelerations," column 2, lines 19-22). Adding load pads to the plate as taught by Edberg et

al. allows for distribution of the forces associated with launch and isolation of the payload during launch.

d. Raboin and Edberg et al. are analogous art because both are from the field of endeavor of space exploration.

e. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the end rings of Raboin et al. in view of Hebert by adding load pads as taught by Edberg et al., in order to protect precious payloads from forces associated with shuttle launch.

22. Regarding claims 15 and 17:

a. The respective combinations of components detailed above render the claimed method steps obvious since such would be the logical manner of using the combination.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Branon C. Painter whose telephone number is (571) 270-3110. The examiner can normally be reached on Mon-Fri 7:30AM-5:00PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor Batson can be reached on (571) 272-6987. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Victor Batson
Supervisory Patent Examiner
Art Unit 3609

Branon Painter
07/03/2007